November 20, 2013

Mr. Andrew Bracker
City Planning and Development Department
City of Kansas City, Missouri
414 E. 12th Street, 16thFloor
Kansas City, Missouri

Subject: Draft Remedial Action Plan
Hardesty Building 11 Asbestos and Lead-Based Paint
Terracon Project Number: 02137115

Dear Mr. Bracker:

Terracon Consultants, Inc. (Terracon) is pleased to provide this Draft Remedial Action Plan (RAP) for abatement of asbestos containing materials (ACM) and stabilization of peeling lead-based paint (LBP) at Building 11 at the Hardesty Complex. Building 11 is located at 605 Hardesty, Kansas City, Missouri. Terracon understands that removal of ACM and stabilization of LBP is required for renovation projects overseen by the Missouri Department of Natural Resources, (MDNR) Brownfields/Voluntary Cleanup Projects (BVCP), and must comply with all Kansas City, Missouri Health Department, Air Quality Program requirements. Included in this RAP are the following:

1. Copies of the current asbestos and LBP inspection reports that includes:
   - Tables showing suspect ACM tested and test results, including percent asbestos, type of asbestos, and quantity of material (square feet or linear feet)
   - Tables showing suspect LBP tested and test results including percent lead, paint color, and estimated square footage
   - Laboratory raw data reports
   - Department certification of the asbestos and lead inspector
2. Copies of all abatement notification forms sent to MDNR or the MDNR-delegated local agency.
3. Specifications to be used for the removal of ACM in Building 11. General description of LBP stabilization work practices to be used in Building 11.
4. The name of the contractor who will perform the work and a statement that the contractor is a Missouri-licensed asbestos abatement contractor.
5. Clearance sampling protocols including sample locations, number of samples, sample type and sampling goals.
6. Floor plans of buildings before and after building renovations that show locations of ACM.

Please review this document and correspond with me regarding your approval. If you have questions on this RAP, please contact me at 913-492-7777.

Sincerely,

Allen Bartels
Program Manager

Mitch Reiber, CIH
Quality Assurance Program Manger

REMEDIAL ACTION PLAN
ASBESTOS AND LEAD-BASED PAINT – BUILDING 11
506 HARDESTY
KANSAS CITY, MISSOURI

Prepared for:

CITY OF KANSAS CITY, MISSOURI
CITY PLANNING AND DEVELOPMENT DEPARTMENT
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NOVEMBER 20, 2013

APPROVED BY:

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Andrew Bracker, City of Kansas City, MO Brownfield Coordinator	Date
David Marshall, City of Kansas City, MO Qualified Environmental Professional	Date
Susan Klein, EPA Region 7 Project Officer	Date
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Jim Turner, Chief Financial Officer, Hardesty Renaissance Economic Development Corporation	Date

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1.0 INTRODUCTION

This project concerns the abatement of Asbestos Containing Materials (ACM), stabilization of Lead-based Paint (LBP), and management of other hazardous materials in Building No. 11 of the former Hardesty Federal Complex. The project is funded by a loan from the City of Kansas City, Missouri (City) through the Kansas City Brownfields Revolving Loan Fund (RLF). The RLF is capitalized by a grant from the U.S. Environmental Protection Agency (EPA) and the use of grant funds is subject to the terms and conditions of federal cooperative agreement no. BF-97700901 (Federal Cooperative Agreement).

To ensure that the standards of cleanup are protective of human health and the environment, the City requires that the cleanup be consistent with the requirements of the Missouri Brownfields Voluntary Cleanup Program (BVCP) and the Missouri Risk-Based Corrective Action Rule that would apply if the site were enrolled in the BVCP program and subject to state oversight. (The Missouri BVCP Generic QAPP is the only BVCP requirement that will not apply to this project because the project is not subject to the Missouri quality management plan. In its place, this site-specific QAPP has been prepared for EPA review and approval.) The cleanup is also required to comply with all applicable state and federal laws and regulations.

To ensure these requirements and standards are met, the City has designated a Qualified Environmental Professional (QEP) to review and approve the Remedial Action Plan (RAP) and the Quality Assurance Project Plan (QAPP), to observe field activities, to work with Terracon and the remediation contractor to verify correct implementation of the RAP and the QAPP, and to review and approve final documentation of all work. In addition, the City Brownfields Coordinator is responsible on behalf of the City for ensuring overall compliance with the terms and conditions of the Federal Cooperative Agreement, and will review and approve the RAP and QAPP.

History of the Hardesty Complex Site

The main function of this former federal facility depot was to feed, clothe and equip the Army during World War II and from 1940 to 1953. The Army used the depot to receive and store protective and impermeable clothing, laundry and dry-cleaning supplies, inks, lithographic chemicals, petroleum products and petroleum handling equipment; reclaim petroleum containers, and treat clothing to make them resistant to chemicals such as mustard gas. The site was transferred to the U.S. General Services Administration, or GSA, Oct. 1, 1960. In 1980 GSA sold two of the buildings (1 and 2) to Megaspace Ltd. In September 2011, GSA sold the remaining approximate 18 acres to the Hardesty Renaissance Economic Development Corporation through a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 120 Early Transfer process where GSA maintains responsibility for addressing environmental-related issues resulting from past operations.

Environmental Contamination

For several years, GSA has worked to investigate the source and the extent of the pollution in and around the site of the former federal complex. The Missouri Department of Natural Resources (MDNR) Federal Facilities Section provides oversight at this facility under CERCLA or the Superfund Law.

The primary materials present in the groundwater are fuel and dry cleaning by-products, most likely due to operations during and immediately following World War II.

The facility once used several underground storage tanks. Some were used to hold petroleum products; others held cleaning solvents. Over time, the tanks deteriorated and fluids leaked into the soil and groundwater. It is the leaked material which is the current source of the groundwater pollution both on and off the site of the facility. The primary chemical that is present in the groundwater is trichloroethylene (TCE).

GSA is now entering the next phase of that investigative work per the MDNR approved Remedial Investigation (RI) work plan. GSA is committed to ensuring that any potential environmental concerns are addressed as quickly as possible. The MDNR will continue to provide oversight and assistance on the cleanup of the site. If any testing results indicate a potential health concern, GSA will work with the environmental health experts and environmental regulators to find solutions, and we will communicate those concerns to the community immediately.

Building 11

In early 2013 several soil borings and groundwater wells were installed in the area of Building 11 (a portion of the overall former federal complex) by Terracon per the MDNR approved RI work plan. On March 27, 2013, soil sampling activities from soil borings 19-B1, 19-B2, and S-B6 were completed. On April 3, 2013, groundwater were collected from monitoring wells MW-9, MW-17, and MW-30.

The results of these soil and groundwater sampling activities were provided in a letter report *Building 11 – Surrounding Area Sampling Results*, dated April 29, 2013. A copy of the Building 11 report is provided in Appendix E of this RAP.

Most detected soil concentrations were at or below the laboratory reporting limit (concentration shown when qualified as “U”) or below the residential US EPA regional screening levels (RSLs) except for the following:

- Benzo(a)pyrene which was above the residential RSL for soil but below the industrial RSL for soil.
- Arsenic and thallium which are above the residential and industrial RSL, but are within naturally concentrations for this region.

The detected groundwater concentrations were at or below the laboratory reporting limit (concentration shown when qualified as “U”) or below the US EPA tapwater levels, US EPA maximum contaminant levels (MCLs), and/or US EPA vapor intrusion screening levels (VISLs).

Remedial investigation efforts continue across the site as a whole and may include additional soil and/or groundwater sampling to fill in data gaps as needed in the future. In relation to Building 11, this could include evaluating background concentrations site wide and/or filling in data points geographically across the site and in the vicinity of Building 11. It should be noted that a specific sampling plan for additional sampling at the Hardesty Federal Complex has not been completed as of the date of this plan.

Current Building 11 Action

The information provided in this Remedial Action Plan (RAP) is based on information from the ACT Asbestos-Containing Materials Survey Report dated July 10, 2012, supplemental asbestos containing materials (ACM) sampling data provided by Terracon, and Terracon’s LBP Report dated November 1, 2013, at Building 11 located at 506 Hardesty, in Kansas City, Missouri (the site).

Friable and nonfriable asbestos containing materials and lead based paint are present in Building 11. In addition, fluorescent light bulbs, light ballasts, batteries in emergency and exit signs, mercury thermostats and other hazardous materials are identified in the *ENVIRONMENTAL SITE INVESTIGATION REPORT* prepared by SCS Engineers dated November, 2003, and were documented to have been properly addressed in the *ENVIRONMENTAL ASSESSMENT AND LOW LEVEL PCB REMEDIATION REPORT* prepared by ESC Engineers dated February 2007. Given the above, it is not anticipated that additional hazardous materials will be encountered during this project. If any hazardous materials are discovered, they will be handled on a case-by-case basis.

Building No. 11 is located on the east side of Hardesty Street just south of the intersection of Hardesty and Independence Avenue (24 Highway) in east Kansas City, Missouri. The Hardesty site includes several buildings. Surrounding the site are residential properties to the west and south, and other Hardesty Complex buildings to the east and north. Building 11 on the site was formally used by various governmental agencies. GSA owned the site from 1960 until September 2011, at which time the property was transferred to Hardesty Renaissance Economic Development Corporation, a Missouri non-profit corporation. Building 11 has three levels, a basement and two levels above ground level. The building encompasses approximately 213,750 square feet.

Food handling, distribution and other commercial uses are planned for the building. Abatement of the ACM and LBP is planned for the site. This RAP is written assuming that abatement of ACM and LBP will take place. The final report will document any deviations to this RAP.

2.0 ASBESTOS INSPECTION RESULTS

On July 2, 3, and 9, 2012, ACT provided a licensed asbestos inspector to conduct an asbestos survey at the site. ACT followed U.S. Environmental Protection Agency (EPA) guidelines at http://www.epa.gov/region4/air/asbestos/asbmatl.htm for inspections to identify regulated asbestos containing materials under the asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP). According to the survey report, the inspection involved a visual survey of all parts of the building including but not limited to interior and exterior walls of rooms, flooring, roofing, thermal system insulation, ceilings, and other locations where suspect asbestos materials were present. Bulk samples were analyzed by ACT located in Lenexa, Kansas, a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. The samples were analyzed by polarized light microscopy (PLM) with dispersion staining, per EPA Method 600/R-93/116. In accordance with 40 CFR Part 61, Subpart M, a material is considered ACM if it contains greater than 1 percent (%) asbestos. Details of the asbestos survey and analytical results are available in the ACT Survey Report in Appendix A.

On September 25, 2013, Terracon collected additional bulk samples of suspect ACM for analysis. Bulk samples were analyzed by Steve Moody Micro Services, LLC located in Farmers Branch, Texas, a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. The samples were analyzed by polarized light microscopy (PLM) with dispersion staining, per EPA Method 600/R-93/116. In accordance with 40 CFR Part 61, Subpart M, a material is considered ACM if it contains greater than 1 percent (%) asbestos. Details of additional sampling and analytical data are included in Terracon's Supplemental Sampling Report at Appendix B.

The tables presented below summarizes the ACM identified in the ACT Survey Report dated July 10, 2012 and includes additional ACM identified from additional sampling conducted by Terracon on October 3, 2013. Quantities provided in the tables below are those that have been field verified by Terracon and vary from the quantities in the ACT Survey Report. Material descriptions reflect general description by type. For example, 9" x 9" floor tile includes all of the various colors listed in the ACT Survey Report. The ACT Survey Report provided general locations of ACM as throughout the building. The tables below quantify and identify ACM by floor.

Table 1
Summary of ACM Identified

BASEMENT - MATERIALS			
Material Description	**Quantity**	**Condition**	**Classification**
Preformed mag block pipe insulation with mudded joint packings	~ 995 LF	Poor	RACM
Corrugated pipe insulation with mudded joint	~1,040 LF	Poor	RACM

packings			
Layered paper pipe insulation- DW with mudded joint packings	~460 LF	Poor	RACM
Layered paper pipe insulation 16" diameter-roof drain with mudded joint packings	~200 LF	Poor	RACM
Mudded joint packings on fiberglass insulated piping	~106 mudded joint packing	Good	RACM
Tank insulation (2 tanks) – east center mechanical room	~1 tank – 100 SF ~1 tank – 25 SF – mudded ends only	Poor	RACM
Cement flue pipes – east center mechanical room	~20 LF	Good	Cat II
12" x 12" floor tile and mastic	~28,880 SF ~6,137 SF beneath carpet ~722 SF beneath raised floor	Good	Cat 1

FIRST FLOOR- MATERIALS			
Material Description	**Quantity**	**Condition**	**Classification**
Preformed mag block pipe insulation with mudded joint packings	~750 LF	Poor	RACM
Corrugated pipe insulation with mudded joint packings	~405 LF	Poor	RACM
Layered paper pipe insulation with mudded joint packings	~60 LF	Poor	RACM
CHW – mineral wool with tar wrap pipe insulation and mudded joint packings	~995 LF	Poor	RACM
White granular block pipe insulation with mudded joint packings	~150 LF	Poor	RACM
Mudded joint packings and pipe hangers on fiberglass insulated piping	~150 mudded joint packings and pipe hangers	Good	RACM
Cement pipe	~30 LF	Good	Cat II
9" x 9" floor tile and mastic	~35,895 SF (1,805 SF beneath carpet)	Good	Cat I
12" x 12" floor tile and mastic, various colors – north office areas	~2,750 SF	Good	Cat I
12" x 12" brown floor tile and mastic	~11,941 SF	Good	Cat I
Mastic beneath brown sheet vinyl flooring	~4,200 SF	Good	Cat I

2’ x 4’ ceiling tiles – north center office area	~468 SF	Poor	RACM

SECOND FLOOR - MATERIALS			
Material Description	**Quantity**	**Condition**	**Classification**
Corrugated pipe insulation with mudded joint packings	~395 LF	Good	RACM
CHW mineral wool with tar wrap pipe insulation and mudded joint packings	~260 LF	Poor	RACM
White granular block pipe insulation with mudded joint packings	~180 LF	Poor	RACM
Layered paper pipe insulation with mudded joint packings	~20 LF	Poor	RACM
Mudded joint packings on fiberglass insulated piping	~110 mudded joint packings	Fair	RACM
Chiller insulation – east mechanical room	~360 SF	Poor	RACM
Cement wall panels – 2nd floor restroom	~1,200 SF	Good	Cat II
Exterior cement panels over windows – north and west renovation area	~1,200 SF	Good	Cat II
Cement pipe	~30 LF	Good	Cat II
9” x 9” floor tile and mastic	~3,345 SF	Good	Cat I

3.0 ASBESTOS ABATEMENT

Gerken Environmental Enterprises, Inc. (Gerken) a licensed Missouri asbestos abatement contractor, that meets all the required certifications specified on the fact sheet in MDNR’s Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites (MDNR 2009), will be conducting the asbestos abatement.

Table 2
Summary of ACM Scheduled for Abatement

BASEMENT ACM TO BE REMOVED			
Material Description	**Quantity**	**Condition**	**Classification**
Preformed mag block pipe insulation with mudded joint packings	~ 995 LF	Poor	RACM
Corrugated pipe insulation with mudded joint packings	~1,040 LF	Poor	RACM
Layered paper pipe insulation- DW with mudded joint packings	~460 LF	Poor	RACM
Layered paper pipe insulation 16” diameter-	~200 LF	Poor	RACM

roof drain with mudded joint packings			
Mudded joint packings on fiberglass insulated piping	~106 mudded joint packing	Good	RACM
Tank insulation (2 tanks) – east center mechanical room	~1 tank – 100 SF ~1 tank – 25 SF – mudded ends only	Poor	RACM
Cement flue pipes – east center mechanical room	~20 LF	Good	Cat II

FIRST FLOOR ACM TO BE REMOVED			
Material Description	**Quantity**	**Condition**	**Classification**
Preformed mag block pipe insulation with mudded joint packings	~750 LF	Poor	RACM
Corrugated pipe insulation with mudded joint packings	~405 LF	Poor	RACM
Layered paper pipe insulation with mudded joint packings	~60 LF	Poor	RACM
CHW – mineral wool with tar wrap pipe insulation and mudded joint packings	~995 LF	Poor	RACM
White granular block pipe insulation with mudded joint packings	~150 LF	Poor	RACM
Mudded joint packings and pipe hangers on fiberglass insulated piping	~150 mudded joint packings and pipe hangers	Good	RACM
Cement pipe	~30 LF	Good	Cat II
12” x 12” floor tile and mastic, various colors – north office areas	~2,750 SF	Good	Cat I
2’ x 4’ ceiling tiles – north center office area	~468 SF	Poor	RACM

SECOND FLOOR ACM TO BE REMOVED			
Material Description	**Quantity**	**Condition**	**Classification**
Corrugated pipe insulation with mudded joint packings	~395 LF	Poor	RACM
CHW mineral wool with tar wrap pipe insulation and mudded joint packings	~260 LF	Poor	RACM
White granular block pipe insulation with mudded joint packings	~180 LF	Poor	RACM
Layered paper pipe insulation with mudded joint packings	~20 LF	Poor	RACM

Mudded joint packings on fiberglass insulated piping	~110 mudded joint packings	Fair	RACM
Chiller insulation – east mechanical room	~360 SF	Poor	RACM
Cement wall panels – 2nd floor restroom	~1,200 SF	Good	Cat II
Exterior cement panels over windows – north and west renovation area	~1,200 SF	Good	Cat II
Cement pipe	~30 LF	Good	Cat II
9” x 9” floor tile and mastic	~3,345 SF	Fair	Cat I

3.1 ACM ABATEMENT TECHNIQUES

An asbestos abatement contractor walk-through was held on October 2, 2013 at 1:30 PM at Building 11. At this walk-through, an asbestos removal specification was provided to each prospective bidder. Bids were procured and Gerken Environmental Enterprises (Gerken) was selected at the removal contractor. Attachment C includes the specification, the bid tally showing the results of the bidding process and bid required submittals from Gerken.

Major sections of the “Asbestos Removal Bid Document” that apply to the work are as follows:

DIVISION 1 – GENERAL REQUIREMENTS
- 1529 Glovebag Work
- 1526 Temporary Enclosures
- 1527 Regulated Areas
- 1563 Decontamination Units
- 1711 Project Decontamination
- 1712 Cleaning and Decontamination Procedures

DIVISION 2 – SITE WORK
- 2081 Removal of Asbestos-Containing Materials
- 2084 Disposal of Asbestos-Containing Materials

3.2 ACM CLEARANCE STANDARDS

Terracon as the design consultant and third party abatement oversight contractor will perform the air monitoring and air clearance sampling. Gerken will conduct all personal monitoring of abatement workers required by OSHA for the ACM abatement at the site. Both Terracon and Gerken meet all the required certifications specified on the fact sheet in MDNR’s Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites (MDNR 2009).

Personal air monitoring will be conducted to determine employee’s exposure (outside the respirator) to airborne fibers. Representative daily personal monitoring during abatement projects

is required by OSHA's Asbestos Standard (29 CFR 1926.1101). Moreover, every worker shall have the right to know the asbestos concentrations to which he/she is exposed and what measures are in place to protect the abatement worker. Data from personal air monitoring will be used to verify effectiveness of removal engineering techniques for achieving minimal employee exposure.

Terracon will provide an Air Sampling Technician under the direct supervision of a Missouri Air Sampling Professional (ASP) to collect area air samples while asbestos abatement is occurring. Area sampling will be conducted to verify the effectiveness of engineering controls implemented by the abatement contractor. Air sampling and analysis will be conducted in accordance with the guidelines established in the NIOSH Method 7400.

Clearance activities will be conducted by Terracon. Final visual and air clearance sampling will be conducted to verify project completion. Terracon will provide an ASP certified within the state of Missouri to designate locations where air sampling will occur. Terracon will provide an Air Sampling Technician to collect final clearance samples after removal of ACM. Three containments are anticipated – one for the ceiling tile removal on the first floor and one for the mechanical room in the basement and one for the mechanical room on the second floor. These containments will be visually cleared and aggressive TEM air clearances will to be performed. Based on the distribution of the asbestos thermal system insulation (TSI) pipe runs, glove bags or similar methods will be used for abatement.

Final visual and aggressive air clearance sampling will be conducted to verify project completion. Terracon will provide an Air Sampling Professional certified within the State of Missouri to designate locations where air sampling will occur. In turn, an air sampling plan will be developed for the abatement project. Terracon will provide an Air Sampling Technician to collect final air clearance sampling. When PCM air clearance is specified in the *Asbestos Abatement Air Sampling Plan*, five PCM air clearance samples will be collected for analysis per work area. If TEM air clearance is specified in the *Asbestos Abatement Air Sampling Plan*, five TEM air clearance samples will be collected.

Air samples will be analyzed by either Phase Contrast Microscopy (PCM) according to the National Institute of Occupational Safety and Health (NIOSH) Method 7400 or by Transmission Electron Microscopy (TEM) NIOSH Method 7402.

Clearance air samples will be collected following the EPA sampling protocol found in the *Guidelines for Controlling Asbestos Containing Materials in Buildings*. PCM or TEM air sample cassettes will be placed into plastic bags. All samples will be stored in plastic bags pending submittal to QuanTEM for either PCM analysis or TEM analysis for asbestos fiber concentration.

Upon completion of sampling activities, the clearance air samples will be sent to QuanTEM, along with Terracon's COC documentation to QuanTEM in Oklahoma City, Oklahoma. QuanTEM is a member of the American Industrial Hygienist Association (AIHA) Laboratory Accreditation Program - certified laboratories. QuanTEM's, certification number is 101352.

Final air clearing criteria is:

- PCM - All of the five (5) air clearance samples analyzed are less than or equal to 0.01 fibers per cubic centimeter (0.01 f/cm^3) of air to consider the abated area cleared.

- TEM - The average of five (5) air clearance samples analyzed must not exceed 70 structures per millimeter squared (70 s/mm^2) to consider the abated area cleared.

3.3 ASBESTOS OPERATION AND MAINTENANCE PLAN

An Asbestos Operations and Maintenance (O&M) plan will be prepared for the site to address remaining asbestos containing materials per MDNR's Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites (MDNR 2009). The O&M plan will include the following: a description of the type and amount of asbestos containing materials, a drawing showing the locations of asbestos containing materials, description of accessibility, protocol and schedules for regular inspections, and contingency plans for dealing with any damaged or necessarily disturbed asbestos containing materials.

4.0 LBP INSPECTION RESULTS

On October 21 & 22, 2013, Terracon completed a LBP survey at the site. Details of the LBP inspection and analytical results are available in the Terracon's LBP Survey Report in Appendix D. Also in Appendix D is a sample location drawing showing the locations where lead paint chip samples were collected and a spreadsheet detailing the results of laboratory sampling. Given the general poor condition of interior spaces of the building at the time of the LBP testing (vandalism over the past several years has left interior spaces extensively damaged), not all suspect LBP was accessible for testing. Every effort was made to identify damaged LBP in accessible areas. The LBP O&M plan prepared for this building will address possible suspect LBP that was not accessible at time of testing.

According to the LBP survey report, the inspection involved a visual survey to identify potential LBP, estimates of the extent and condition of the paint, and collection of representative paint chip samples for analysis to determine lead content.

The visual survey was conducted of accessible painted surfaces throughout the interior of the building to evaluate paint condition, substrate, and paint color. The LBP inspection was performed by an inspector licensed by the state of Missouri. Paint chip samples of suspected LBP were collected and analyzed to determine lead content. According to EPA and the Department of Housing and Urban Development (HUD), paint is considered lead-based if it contains lead equal to or exceeding 0.5 percent by weight (5,000 milligrams per kilogram [mg/kg] or 5,000 parts per

million [ppm]). The samples were shipped by overnight courier to the QuanTEM Laboratories for analysis according to EPA Method 600/R-93/200.

TABLE 3
Summary of LBP Identified

BASEMENT - MATERIAL		
Material Description	**Quantity**	**Condition**
East Center Mechanical room concrete walls	~1,250 SF	Peeling
East Center Mechanical room door	~40 SF	Peeling
East Center Mechanical room radiators	~50 SF	Peeling
Wood Windows at perimeter	~1,750 SF	Intact
Base of Columns row 7 - yellow paint	~650 SF	Intact
Stairwells metal handrails - yellow paint	~60 SF	Peeling
Stairwells metal doors and frames	~120 SF	Intact

FIRST FLOOR- MATERIAL		
Material Description	**Quantity**	**Condition**
Wood Windows at perimeter	~9,250 SF	Intact
Base of Columns row 3 - yellow paint	~650 SF	Intact
Stairwells metal handrails - yellow paint	~60 SF	Peeling
Stairwells metal doors and frames	~120 SF	Intact

SECOND FLOOR - MATERIAL		
Material Description	**Quantity**	**Condition**
Wood Windows at perimeter	~9,250 SF	Intact
Base of Columns west center area - tan paint	~900 SF	Intact
Stairwells metal handrails - yellow paint	~60 SF	Peeling
Stairwells metal doors and frames	~120 SF	Intact

EXTERIOR - MATERIAL		
Material Description	**Quantity**	**Condition**
Concrete beam between 1st and 2nd floors	~1,500 SF	Peeling
Wood awning above NE entry and east dock areas	~1,000 SF	Peeling

5.0 LBP ENCAPSULATION TECHNIQUES

Gerken, a licensed Missouri LBP abetment contractor that meets all the required certifications specified on the fact sheet in MDNR's Asbestos and Lead-Based Paint Abatement Requirements

at Brownfields/Voluntary Cleanup Program Sites (MDNR 2009), will be conducting LBP stabilization.

Therefore, LBP encapsulation activities will be followed as applicable and such activities will meet all applicable federal, state, and local regulations.

TABLE 4
LBP Stabilization Areas

BASEMENT - MATERIAL		
Material Description	**Quantity**	**Condition**
East Center Mechanical room concrete walls	~1,250 SF	Peeling
East Center Mechanical room door	~40 SF	Peeling
East Center Mechanical room radiators	~50 SF	Peeling
Stairwells metal handrails - yellow paint	~60 SF	Peeling

FIRST FLOOR- MATERIAL		
Material Description	**Quantity**	**Condition**
Stairwells metal handrails - yellow paint	~60 SF	Peeling

SECOND FLOOR - MATERIAL		
Material Description	**Quantity**	**Condition**
Stairwells metal handrails - yellow paint	~60 SF	Peeling

EXTERIOR - MATERIAL		
Material Description	**Quantity**	**Condition**
Concrete beam between 1st and 2nd floors	~1,500 SF	Peeling
Wood awning above NE entry and east dock areas	~1,000 SF	Peeling

5.1. LBP Removal and Stabilization

Removal of flaking and peeling lead-based paint and lead-based paint dust that may be a hazard to human health or the environment is required for renovation projects overseen by the Brownfields/Voluntary Cleanup Program. The intent of the project is to stabilize accessible LBP by encapsulation. Before encapsulation, all peeling LBP will be removed and disposed of in accordance with applicable state and federal regulations.

Procedures and work practices will be developed in compliance with MDNR's Publication 2099 entitled "Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites" (MDNR 2009). This document will be a supplement to the "Asbestos

Removal Bid Document" already prepared. The supplement will include procedures and work practices for the proper removal of peeling LBP and stabilization of the remaining painted surfaces where peeling paint is removed. In general peeling paint will be wet-scraped, HEPA vacuum to area, wet wiped, cleaned with a TSP solution, and wet wiped again prior to clearance testing.

This lead waste will be subject to hazardous waste determination. If a small quantity of building debris is generated, bulk samples of various debris materials representative of the materials from the building components removed will be collected by hand. Also, bulk samples of the representative lead waste components will be collected by hand. Any non-dedicated sampling equipment used in the collection process will be decontaminated following collection of each sample. Samples will be placed into plastic bags. All samples will be stored in plastic bags pending submittal to ESC for analysis for all eight metals noted in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selemium and silver) by TCLP.

The contractor will be responsible for properly disposing of wastewater generated during abatement activities.

5.2 Clearance for Encapsulation of LBP

After the preferred encapsulate manufacturer's recommended curing time, the encapsulated surface will be inspected by the lead abatement supervisor to ensure integrity. Following paint encapsulation and cleaning, a visual inspection will be performed to determine if painted surfaces are not encapsulated or if visible dust is present.

If deteriorated painted surfaces or dust is present, the above-mentioned activities will be re-performed. When satisfactory paint encapsulation, visual inspection, and associated clean-up are achieved, clearance sampling for dust will occur.

One floor sample from each work area will be collected. Prior to all clearance samples taken on floors, per Chapter 15 of the HUD Guidelines, a sealant should be applied to the floor prior to the clearance sampling.

The number of clearance wipe samples cannot be determined until actual work begins. However it is anticipated that up to 50 dust wipe samples may be required. Any deviations from this RAP will be cited in the final report.

5.3 LBP CLEARANCE STANDARDS FOR ENCAPSULATION OF LBP

Final clearance sampling in the work areas will be compared to residential standards as listed in Missouri Risk-Based Corrective Action (MRBCA) Appendix N, Clean-Up Levels for Surfaces and Building 103S159907.001 21 Interiors. Residential clearance standards are 40 micrograms of lead per square foot for floors, 250 micrograms of lead per square foot for interior windowsills, and 400

micrograms of lead per square foot for window wells per the MDNR BCVP and the MRBCA guidance.

7.0 LBP OPERATIONS AND MAINTENANCE PLAN

An LBP Operations and Maintenance (O&M) plan will be prepared for the site to address LBP per MDNR's Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites (MDNR 2009). The O&M plan will include the following: a drawing showing the locations of LBP, description of accessibility, protocol and schedules for regular inspections, and contingency plans for dealing with any damaged or necessarily disturbed LBP.

6.0 FINAL REPORT

When the ACM and LBP abatement work is complete, a final report will be submitted to the HREDC. The report will present air monitoring results, including final clearance testing; waste disposal documentation; any field notes documenting the sampling and clearance testing; a draft O&M Plan for in place LBP; and information on significant deviations from the RAP.

8.0 NEGATIVE EXPOSURE ASSESSMENT (AIR MONITORING)

Per OSHA Regulations 29 CFR Standard 1926.62, each employer with a workplace covered by this standard shall determine if any employee may be exposed to asbestos or lead at or above the action level. The standard defines the action level as employee exposure, without regard to use of respirators, to an airborne concentration of asbestos of 0.1 f/cc of air and lead of 30 micrograms per cubic meter of air, calculated as an 8-hour, time-weighted average. Because asbestos and lead work will be conducted by a licensed abatement contractor, the contractor is responsible for submitting safe work practices under OSHA 1926.62 to Terracon for review, and for implementing those practices. Assumedly, the asbestos and lead contractors have information on the associated asbestos and lead work practices and appropriate respirator applicability.

9.0 REFERENCES

Missouri Department of Natural Resources (MDNR) – 2099 - *Asbestos and Lead-Based Paint Abatement Requirements at Brownfields/Voluntary Cleanup Program Sites*

ACT – *Asbestos-Containing Material Survey Report-Building 11* – July 10, 2012

Terracon – *Supplemental ACM Sampling Report* – October 2, 2013

Terracon - *Asbestos Removal Bid Document* – October 2, 2013

Terracon – *LBP Testing Report* – November 1, 2013

Terracon – *Building 11 – Surrounding Area Sampling Results* – April 29, 2013